Cairo Bridge Project
Environmental Assessment
Ritchie County, West Virginia
State Project: S343-31-9.82
Federal Project: STP-0031(037)D

U.S. Department of Transportation
Federal Highway Administration

West Virginia Department of Transportation
Division of Highways

December 2017

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CAIRO BRIDGE PROJECT
RITCHIE COUNTY, WEST VIRGINIA

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to 42 USC 4332(2)(c)
U.S. Department of Transportation
Federal Highway Administration
and
West Virginia Department of Transportation - Division of Highways

12-7-17
DATE OF APPROVAL

FOR WEST VIRGINIA DIVISION OF HIGHWAYS

12-14-17
DATE OF APPROVAL

FOR FEDERAL HIGHWAY ADMINISTRATION

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This proposed project will consist of a new bridge in the Town of Cairo, West Virginia. Comments on this Environmental Assessment are due by _____ and should be sent to:

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TABLE OF CONTENTS

Table No. Title Page

LIST OF FIGURES

Figure No.

PHOTOS

INTRODUCTION

The West Virginia Division of Highways (WVDOH) proposes to replace the existing Cairo Bridge with a new crossing over the North Fork Hughes River that meets current design standards. The existing bridge is located on Main Street (WV 31) in Cairo, West Virginia, and carries traffic over the North Fork Hughes River. The bridge was built in 1925 and is a contributing structure to the Cairo Historic District. Mussel species of concern have also been found in this section of the river. Average daily traffic (ADT) on the bridge is currently 750 vehicles per day (WVDOH 2017a).

The study area is centered on Main Street (WV 31). It begins 200 feet from the northern edge of the existing bridge and extends 200 feet from the southern edge of the bridge. Despite being located within the Town boundary, the project area is more rural than urban in character. Figure 1 shows the project region and Figure 2 shows the project's location.

This Environmental Assessment (EA) is being prepared by the WVDOH, in conjunction with the Federal Highway Administration (FHWA), to fulfill requirements set forth in the *National Environmental Policy Act of 1969* (NEPA) and related transportation development laws. NEPA requires that the potential for environmental impacts be assessed for every federal action that could significantly affect the quality of the human environment.

Transportation projects vary in their potential to affect the environment and early in the process, the WVDOH determined that the Cairo Bridge Project will impact the Cairo Historic District and rare, threatened, or endangered (RTE) mussels, but the significance of the impacts is unclear. Therefore, the project was advanced with an EA.

The study area for the proposed project is located entirely within the Town of Cairo in Ritchie County. The Town operates under the Mayor-Council Plan specified in *West Virginia Code, Chapter 8, Section 8-3-2*. The Town Council together with the Mayor is the governing body and administrative authority for the municipality. At the time the 2010 U.S. Census was taken, 281 people lived within the Town boundary. Current population estimates show a slight loss of population in the community.

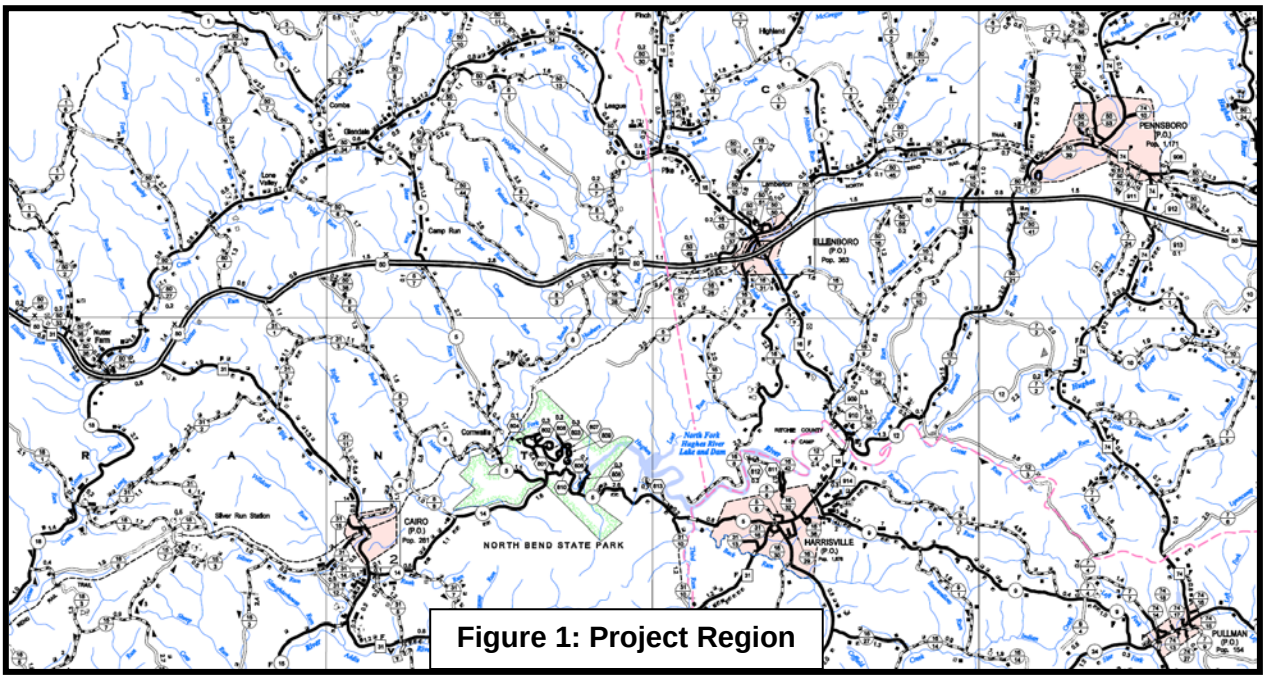


Figure 1: Project Region

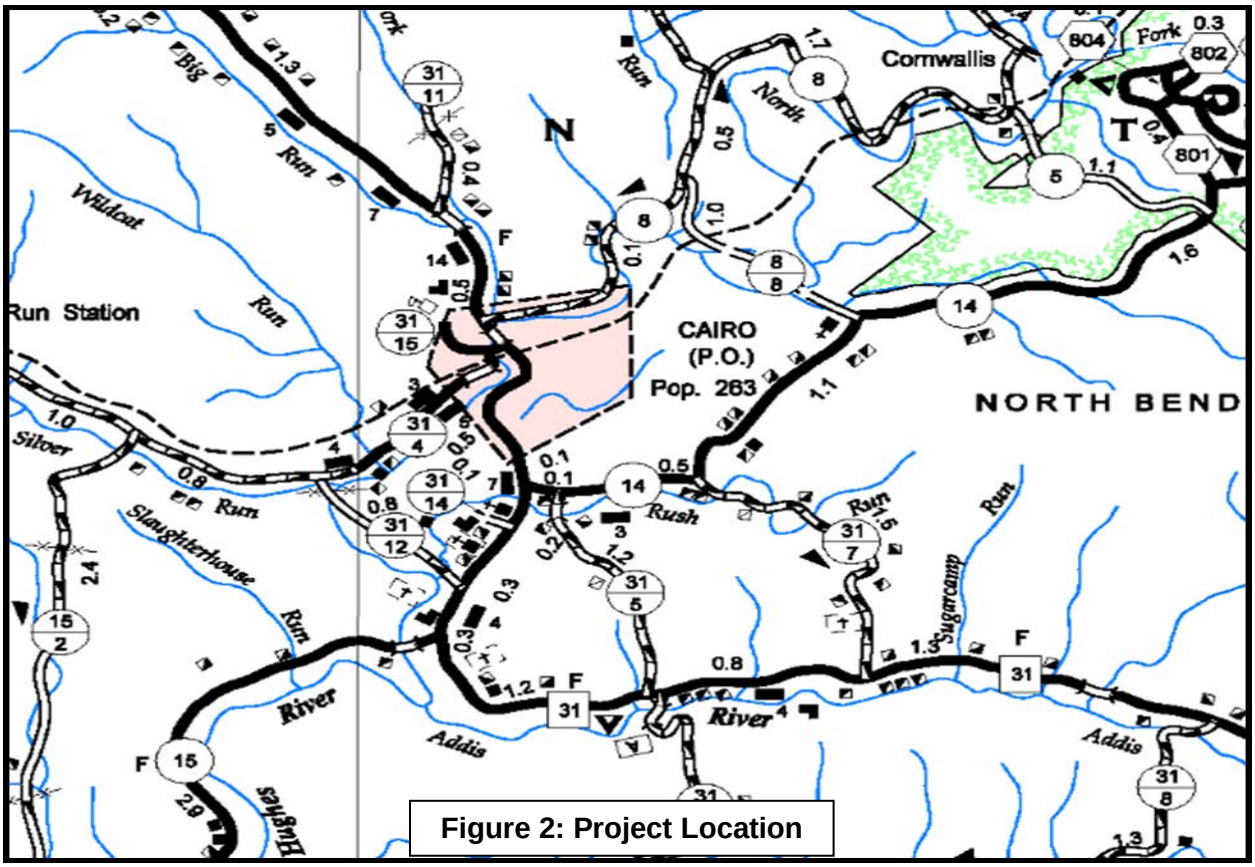


Figure 2: Project Location

HOW HAS THE PUBLIC BEEN INVOLVED IN THE PROJECT?

A public informational meeting for the project was held on December 5, 2016, at the Cairo Community Center. The meeting was held to present current information on the project, answer questions from the public, and listen to ideas or concerns from community residents and businesses. The meeting complied with the public involvement requirements of NEPA and Section 106 of the *National Historic Preservation Act*.

Citizens at the Public Informational Meeting

Approximately 30 people attended the public informational meeting. At the meeting, the WVDOH showed the public five potential alternatives for replacing the bridge and provided other supporting documentation for the project. The alternatives are described fully further in this report. All information presented at the meeting was also available online at the WVDOH project website (http://go.wv.gov/dotcomment). That information can be found in Appendix A of this EA.

All of the residents who voiced an opinion at the public informational meeting expressed support for the project to the WVDOH staff present. Written comments were provided by eight people, with five people expressing a preference for Alternative 1B, one person expressing a preference for Alternative 1A, one person expressing a preference for Alternative 2B, and one person supporting the project but not expressing a preference for any particular alternative.

WHAT IS THE PURPOSE OF THE PROJECT?

The purpose of the project is to construct a new bridge that will replace the existing Cairo Bridge with a new crossing over the North Fork Hughes River that meets current design standards. The crossing will continue to carry Main Street traffic over the North Fork Hughes River near its current location.

WHAT ARE THE NEEDS FOR THE PROJECT?

As a result of WVDOH transportation planning efforts, project scoping, and public comments, a specific purpose and need was established for the project. The project is needed to assure safe and efficient transportation access (including connectivity for residents and business along WV 31); assure adequate emergency response times for ambulance, police, and fire services; and, support economic development.

Safe and Efficient Transportation Access

The Cairo Bridge was built in 1925 and rehabilitated in 1976 and 1989. Since the last time it was rehabilitated, the bridge has experienced substantial deterioration and is currently posted with a 16-ton weight limit. A bridge inspection conducted on August 7, 2015, rated the deck and superstructure in poor condition and suggested replacement of the structure. A second inspection, conducted in October 2016, showed deterioration of the bridge abutments as well.

During the October 2016 inspection, professional engineers detected significant destress in the deck, stringers, and lower chord of the truss. Following the October inspection, a Final Design Study Report was prepared by WVDOH. The Final Design Report analyzed the condition of the bridge, developed several preliminary alternatives, and presented recommendations for correcting the existing problems of the bridge. Based on that report, the WVDOH concluded that in its present condition rehabilitation of the bridge will be impractical (WVDOH 2017b). Rehabilitation only provides a short-term structural solution for a bridge with a substandard roadway width and will require design exceptions. As a result, a rehabilitation alternative was dropped from consideration early in the planning and design process.

Cairo Bridge

The bridge has an 18.5-foot roadway width and a 15-foot vertical clearance. While the vertical clearance on the bridge is sufficient for most regular traffic, some truck traffic requires additional

clearance. Additionally, the lane width is considerably less than what is recommended for modern bridges. The substandard width, in and of itself, renders the bridge functionally obsolete for a two-lane, two-way bridge, but the 16-ton weight limit also restricts heavy truck traffic. The weight limit is likely to be further reduced due to the bridge's continued deterioration.

Compounding matters, the existing substructure is chloride contaminated from years of winter road salt, causing the reinforcing steel rods (i.e., rebar) within the bridge's concrete to corrode. This corrosion has exerted increasing pressure on the surrounding concrete and causes delamination and spalling of the deck concrete. Some of the concrete has broken off, exposing the rebar, further accelerating corrosion of the structure's steel components. Concrete deterioration on the deck has also created potholes on the bridge's driving surface.

From a local standpoint, larger deliveries to local businesses and residents are hindered by the weight restriction on the bridge. Specifically, deliveries of heating oil and feed are frequently transferred to smaller trucks before arriving in the town because fully loaded delivery trucks can exceed current weight limits. Large household deliveries like furniture or appliances can also be delayed because delivery schedules from regional warehouses are often dictated by "filling a truck." The need to use smaller trucks for household deliveries can cause further delays for local residents due to the need for special, limited runs to Cairo.

Emergency Response Times


Cairo VFD Pumper

Police service in Cairo is provided by the Ritchie County Sheriff's Department and the West Virginia State Police. Both the Sheriff's office and the Ritchie County State Police detachment are located in Harrisville. Fire protection service to the community is provided by the Cairo Volunteer Fire Department (VFD). The Cairo VFD has mutual aid agreements with the Deerwalk VFD, Ellenboro VFD, Elizabeth (Wirt County) VFD, Harrisville VFD, Pennsboro VFD, and Smithville VFD. Of these other area fire departments, assistance when needed primarily comes from Harrisville and Pennsboro. Other emergency response

services are provided by the Ritchie County Office of Emergency Management and the Ritchie County Ambulance Authority from operation centers in Pennsboro and Harrisville, respectively.

The Cairo VFD is located at 44 McGregor Street, near the community's central business district and on the southeast side of the Cairo Bridge. It responds to emergency calls on both sides of the bridge. Currently, the Cairo VFD has five vehicles in its service fleet: a 1,000-gallon pumper truck, a 2,000-gallon water tanker, a mini-pump rescue truck, a small rescue brush truck, and a rescue all-terrain vehicle. The heaviest of these trucks, the fully loaded and staffed pumper and tanker, is already approaching the current weight limit on the bridge. Further reduction of the load posting on the bridge will require the VFD to use a detour to respond to calls on the other side of the river unless they can use one of their lighter trucks.

If the bridge were closed, the shortest detour from one side of the bridge to the other is approximately 10 miles via WV 31 south, County Route 14, WV 5, and WV 8. Emergency response time using this route is about 25-30 minutes because almost half of this distance is on a gravel road (WV 8), slowing response times down considerably. Heavier trucks, however, would have to be detoured over WV 31 to US 50 to Ellenboro and then on WV 16 through Harrisville and back to Cairo on WV 31, a distance of 28 miles. Emergency response time using the heavy vehicle route would be well over 30 minutes.

The National Fire Protection Association has developed a set of codes and standards that call for first responders to arrive on the scene of an emergency within four minutes at 90 percent of the time (NFPA 2016). Use of an alternate route would exceed this standard by 400 percent, creating a serious threat to public health and property. Such a detour, in effect, will prevent the Cairo VFD from providing emergency service to the northwest and northern parts of its own community. Under those circumstances, fire trucks from Pennsboro, a distance of 19 miles and taking 20-25 minutes, may respond to calls in this part of Cairo faster than the Cairo VFD, but its response would also be critically higher than the standard.

Economic Development

Although a small town, Cairo continues to develop as a tourist center aimed at attracting antique collectors, through-hikers, and visitors to nearby North Bend State Park. Cairo is a quaint, small town that has fallen on hard times. Population in the community was nearly 700 at the turn of

the twentieth century, but is less than half that today. With the loss of population, what once was a vibrant business district in the town with stores, restaurants, and other businesses, now has only a few viable businesses remaining.

Cairo is a major access point for the North Bend Rail Trail, however, and there are opportunities to capitalize on the growing West Virginia tourism industry. Travel and tourism contributes over $4 billion to the West Virginia economy and has been projected to increase by nearly 6 percent annually (WVDOT 2012). Cairo's location along the trail makes it a logical target for economic redevelopment aimed at hiking and camping and other similar outdoor activities.

The North Bend Rail Trail is a multi-use recreational path that is part of the coast-to-coast American Discovery Trail, considered by many hikers to be the backbone for the national trails system. Recreationists from outside the area generally arrive in Cairo from US 50 to the north of town. A trail head is located within the town and the trail provides a pedestrian and bike route from Cairo to North Bend State Park where many recreational opportunities, including fishing, hiking, camping, and indoor overnight accommodations (a modern lodge and rustic cabins) are offered. Closure of the bridge would require a detour that will make the area less attractive as a travel destination.

A lengthy detour will also hinder trail visitors from utilizing trail-related services in Cairo. Trail users often couple-up, whereby two cars are positioned near access points, allowing hikers to park a car in one location, travel on foot one-way linearly, and use the pre-positioned second car to return to camp from another location. Additional mileage could discourage this as well as convenience stops in town as trail visitors return search for supplies or overnight accommodations.

In addition, the bridge is hindering substantial economic development in the oil and gas industry because the equipment used in that industry generally exceeds the bridge's current weight limit. The oil and gas industry is growing at a rapid pace in West Virginia. A study of 230 oil and natural gas vendors in the state showed the industry contributes $5.8 billion to the state's economy and supports 80,400 jobs (API 2015). Cairo cannot service this growth industry because its vendors avoid the area due to the condition of the bridge, but with a new bridge, through-traffic could indirectly stimulate investment in the area and serve as a catalyst for redevelopment of vacant buildings and properties in the business district.

IS THE PROJECT CONSISTENT WITH OTHER AREAWIDE PLANS?

The proposed project is consistent with the *West Virginia Multi-Modal Statewide Transportation Plan* (WVDOH 2010), West Virginia's principal long-range transportation planning document. The *West Virginia Multi-Modal Statewide Transportation Plan* is a policy document that evaluated current needs, revenue, and expenditures across all transportation modes. One of the major objectives of this plan is to develop a modern transportation system that supports economic development goals and serves the needs of West Virginia citizens.

The project is in the *Statewide Transportation Improvement Program (STIP) 2016-2021*. The STIP is the state's plan of action for funding transportation projects. It includes a wide variety of projects including roadway, bridge, bicycle, pedestrian, safety and public transportation (transit) projects (WVDOH 2016).

The project is also consistent with *Mov-Tomorrow: Building Communities for Tomorrow's Economy*, a regional plan developed by the Mid-Ohio Valley Regional Council/Region 5 Planning and Development Council. One of the major goals of the regional plan is to "ensure that communities have adequate basic infrastructure to implement their community and economic objectives" (MOVRC 2016). Ritchie County is one of eight counties that make up Region 5.

Neither the Town of Cairo nor Ritchie County have comprehensive plans. Also, the county does not have a land use master plan or a countywide economic plan that covers Cairo. Nonetheless, conversations with county and regional officials have indicated that there is local support for the project.

WHAT IS THE PREFERRED ALTERNATIVE?

Several alternatives were evaluated throughout the course of the project, including a No-Build Alternative, a rehabilitation alternative, and five build alternatives. As a result of an analysis of potential impacts and consideration of public comments, Alternative 1B was recommended as the preferred alternative because it uses slightly less property from the Cairo Historic District than the other build alternatives; takes the existing bridge out of service earlier in the project schedule; and minimizes permanent right-of-way impacts. Figure 3 shows alternative 1B. This alternative will cost approximately $3.1 million.

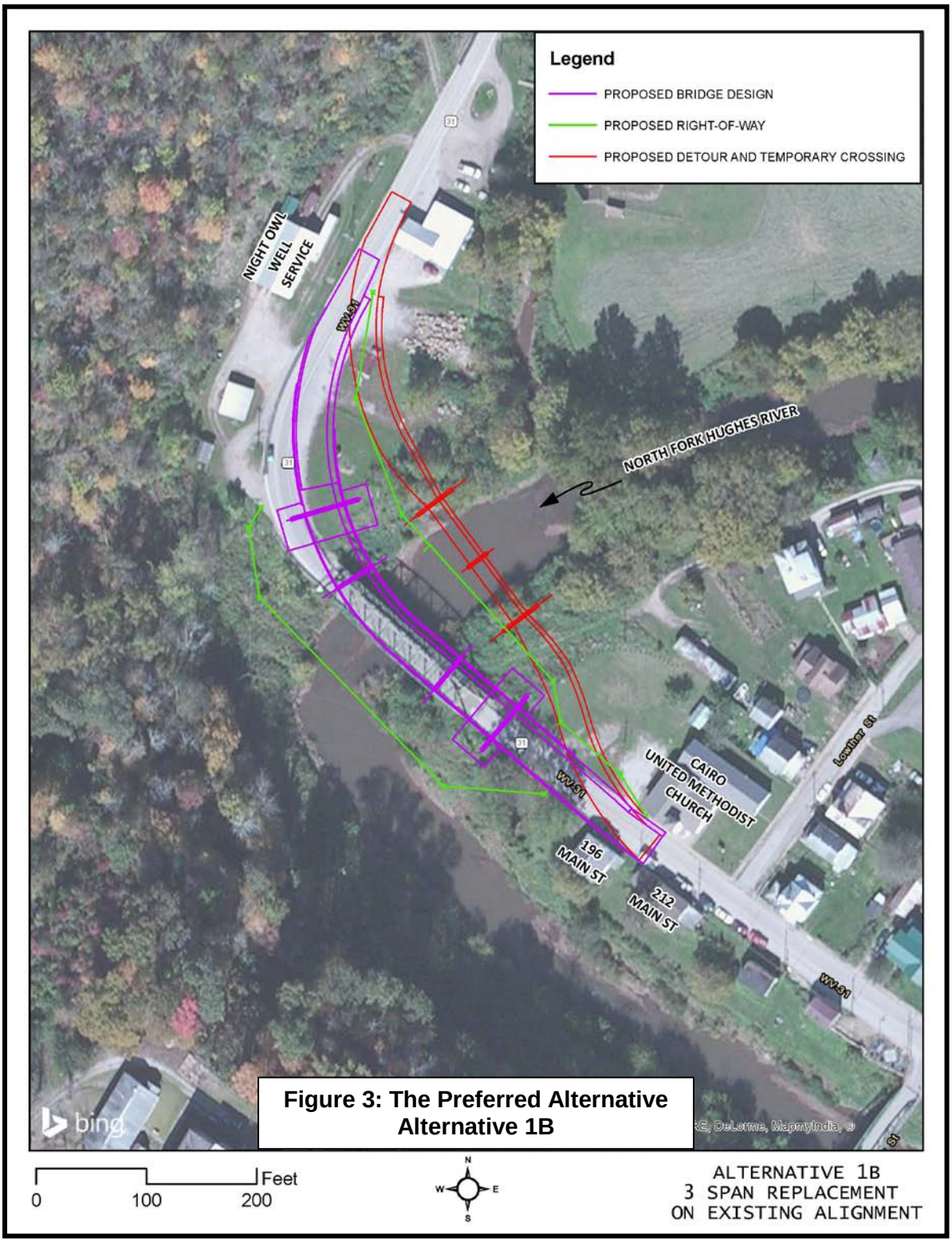


Figure 3: The Preferred Alternative
Alternative 1B

Alternative 1B will replace the existing Cairo Bridge on the same alignment currently used. The new bridge will have two 11-foot travel lanes and a 5-foot sidewalk. It will have three equidistant

spans of approximately 68 feet and be 258 feet in length. During construction, a temporary bridge will be utilized to maintain traffic on WV 31. This minor detour route will consist of a 130-foot long, two-span structure slightly upstream side of the existing bridge and a temporary traffic signal to alternate vehicles across the bridge. The temporary bridge will have one 11-foot travel lane and a 4-foot sidewalk. Once the replacement bridge is open to regular traffic, the temporary bridge will be removed.

WHAT OTHER ALTERNATIVES WERE CONSIDERED?

Besides the five build alternatives, a No-Build Alternative and Rehabilitation Alternative were analyzed. The No-Build-Alternative serves as a benchmark against all alternatives. A complete engineering analysis of the alternatives is found in the Final Design Study Report, incorporated into this EA as Appendix B.

No-Build Alternative

Under the No-Build Alternative, bridge maintenance will continue, but the bridge will continue to deteriorate until complete replacement is unavoidable. Due to the current condition of the bridge, the No-Build Alternative is not considered a viable option. The No-Build Alternative, however, is carried through the entire planning and environmental processes.

Single Span Bridge Replacement at Existing Location (Alternative 1A)

Alternative 1A is similar to the preferred alternative except that it is a single span bridge and has a higher construction cost. It also requires a temporary bridge upstream to maintain traffic during construction. The cost of Alternative 1A is approximately $3.4 million. It was dropped from further consideration because it is nearly identical to Alternative 1B but will cost more to build and impacts the historic district more.

Replacement Upstream (Alternatives 2A and 2B)

Alternatives 2A and 2B construct a new bridge upstream of the existing location and maintain traffic on the existing bridge during construction. Alternative 2A has a single span and

Alternative 2B has three spans. Both upstream alternatives have an estimated cost of approximately $2.8 million. Figure 4 shows Alternative 2B.

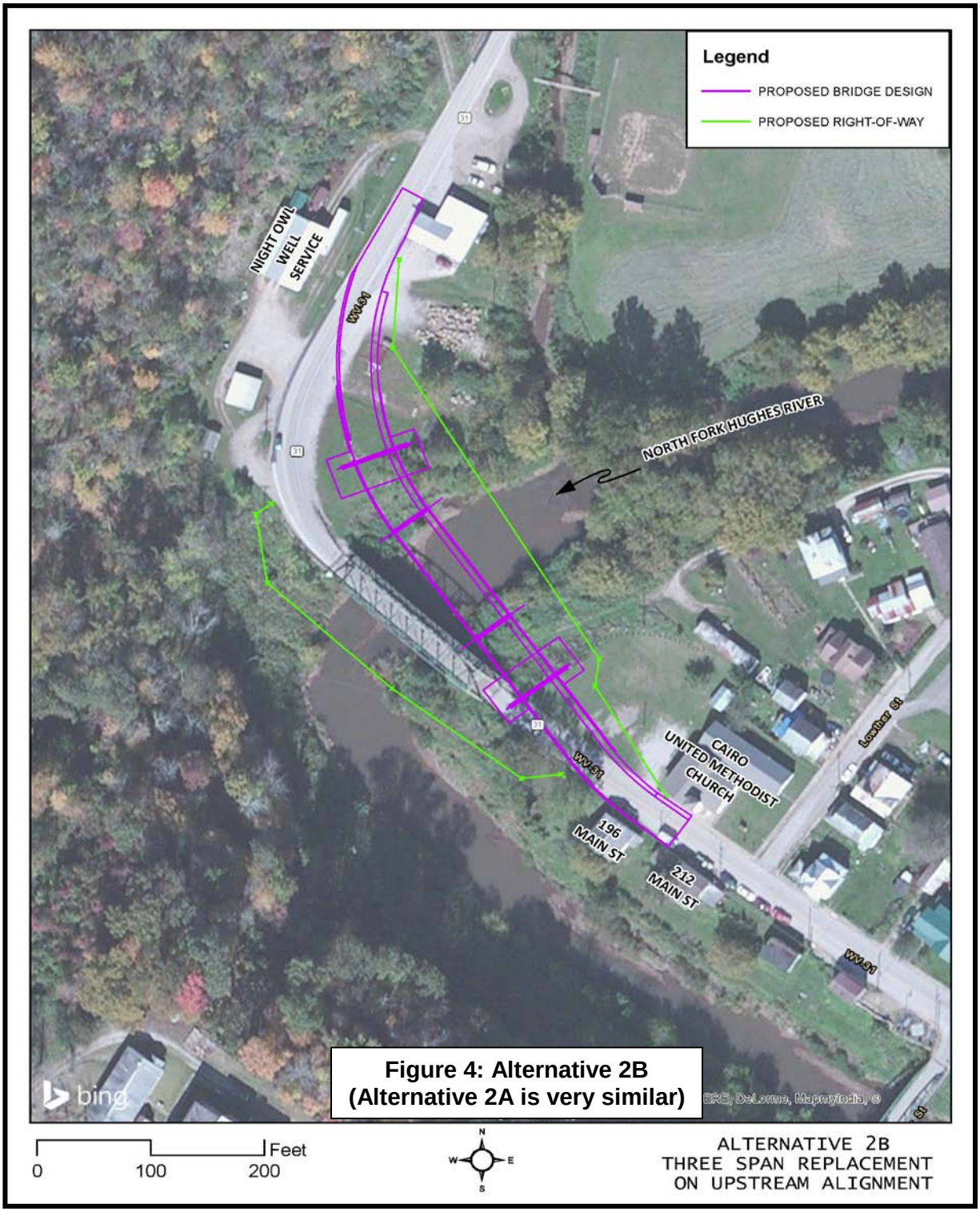


Figure 4: Alternative 2B (Alternative 2A is very similar)

Although the upstream replacements meet the project's purpose and need and cost less to construct than using the existing alignment of the bridge, they were dismissed from further

consideration for the following reasons. First, the upstream alternatives keep the existing bridge in service longer than desired. Not only will that increase maintenance costs, additional weight restrictions could be placed on the bridge to extend its life during construction of a new bridge, further limiting which emergency services vehicles, commercial trucks, and school buses can use the bridge. Second, the upstream alternatives have greater permanent impacts on the local community, especially to the historic district and property owned by the Cairo United Methodist Church.

Rehabilitation of the Existing Bridge (Alternative 3)

Alternative 3, rehabilitation of the existing bridge, replaces the stringers and reinforces the concrete deck. Structural repairs will also be made to the corroded steel members and substructure elements will be rehabilitated and re-used. Any concrete contaminated by chloride will also be repaired or replaced.

Under the Bridge

If Alternative 3 were advanced, a temporary bridge, as with Alternatives 1A and 1B, will be utilized to maintain traffic during construction. Alternative 3 has an estimated construction cost of $3,146,000.

Following the two relatively recent inspections, it was determined that Alternative 3 was impracticable and not a valid solution for the project. Consequently, it was dropped from further consideration. Additional Information on Alternative 3 and the reasons for dropping it are provided later in this EA.

Downstream Replacement (Alternative 4)

Alternative 4, construction of a new bridge downstream of the existing location, extends WV 31 approximately 150 feet further to the west before entering a reverse curve to cross the North Fork Hughes River. The crossing of the river downstream requires a skewed structure and creates longitudinal impacts to the waterway because of a 90 degree bend in the river there. Once across the river, a second reverse curve is necessary to align the roadway with WV 31

through Cairo. The approaches for a downstream alternative require placement of fill material entirely within the floodplain of the river, creating an embankment for the extended roadway.

During the conceptual analysis of this alternative, WVDOH engineers and their consultants determined that any downstream alternative will have impacts above and beyond those of the other alternatives. Based on qualitative, professional engineering judgement, Alternative 4 will cost considerably higher than the other alternatives. Greater impacts and higher costs are expected due to the complicated geometric design necessary to build a new bridge downstream of the bridge's present location. With two reverse curves and a skewed crossing of the North Fork Hughes River, a much longer structure across the river will be needed. By relocating the bridge downstream, longer approaches will need to be built, a small portion of WV 31 will be relocated through undisturbed forestland, and one house on WV 31 will be razed.

The house to be razed is a contributing element to the Cairo Historic District. Their demolition will constitute the only two full uses of a contributing element of the historic district. While other alternatives also use property within the district, Alternative 4 is the only alternative that would require anything other than a sliver take. Although Alternative 4 meets the project purpose and need, it was dismissed at this point from further consideration because of its higher right-of-way costs, its anticipated higher construction costs, and its severity of impact to the Cairo Historic District. For these reasons, Alternative 4 was eliminated during the preliminary design process. As a result, no cost estimates were developed for this alternative.

Summary of Alternatives

Table 1 provides a summary of the alternatives. All would impact the historic district.

Table 1
Summary of Alternatives

Alternative	Description	Property Impacts	Stream Impact	Estimated Cost
No-Build	Continue bridge maintenance, as is.	No		N/A
1A	Single span replacement existing location.	Yes	2,960 SF	$3.4 million
1B	Three span replacement existing location.	Yes	2,960 SF	$3.2 million
2A	Single span replacement upstream.	Yes	2,750 SF	$3.0 million
2B	Three span replacement upstream.	Yes	2,750 SF	$2.9 million
3	Rehabilitation of existing bridge.	No	0	$3.1 million
4	Replacement downstream.	yes	N/A	N/A

WHY CAN'T THE EXISTING BRIDGE BE COMPLETELY REPAIRED?

While the bridge is still considered safe to use, rehabilitation of the existing bridge involves the replacement of the stringers and reinforcement of the concrete deck. If advanced, structural repairs will also be made to the corroded steel members. Substructure elements will be rehabilitated and re-used. Any concrete contaminated by chloride will also be repaired or replaced. Renovation or rehabilitation of the bridge (Alternative 3), however, is no longer considered feasible for a variety of reasons. No additional lane width, height, or load-bearing capacity will result from this alternative. Thus, it will not meet the project purpose and need. Furthermore, additional weight restrictions on the bridge will not only limit emergency response vehicles in their use of the bridge, it will restrict local delivery vehicles and will prevent larger trucks from using the bridge. This could impede economic development in and around Cairo.

Over the lifespan of the bridge, one of the abutments has rotated toward the river, resulting in the expansion bearings at the abutment being backset. This has caused zero clearance at both truss endposts. Horizontal cracks are present in the seat and backwall. Following an inspection of the bridge in 2014, a preliminary plan was developed to rehabilitate the bridge. To strengthen the bridge, the preliminary plan called for the stringers to be replaced and the end floorbeams plated. Visible concrete would be coated for protection. Structural repairs would also be made to the corroded steel members prior to abrasively cleaning and painting the entire structure. The remaining portions of the existing superstructure would be rehabilitated and re-used. The chloride contaminated concrete of the substructure units would have the chlorides extracted through electrochemical chloride extraction. This process removes chloride ions from contaminated concrete and reinstates the passivity of steel reinforcement by temporarily applying an electric field between the reinforcement in the concrete and an externally mounted anode mesh.

A second inspection conducted in October 2016, determined that a rehabilitation alternative is no longer feasible. The more recent inspection detected significant distress in the deck, stringers, and lower chord of the truss. The low chord is bowed 3 inches to the downstream side, most likely caused by corrosion of the grid deck bars which is known to exert compressive stress on the bridge as the corrosion expands. Instability of the abutment may also be increasing the compressive stress in the lower chord. This rotation could result in as much as 6 inches of movement at the cap level. Two abutments may now be rotating as well. As a result,

the WVDOH concluded that rehabilitation of the bridge is no longer under consideration. In its present condition, rehabilitation of the Cairo Bridge would be impractical (WVDOH 2017b).

HOW WELL DOES THE PREFERRED ALTERNATIVE MEET THE PURPOSE AND NEED?

A full range of alternatives were developed and analyzed during preparation of the Final Design Study Report. From a list of seven preliminary alternatives, only the No-Build Alternative and Alternative 1B were carried forward for detailed analysis in this EA. Subsequently, Alternative 1B, the preferred alternative, was compared to the No-Build Alternative to determine how well it meets the project's purpose and need. The results of that comparison are described in Table 2.

Table 2
Comparison of the No-Build Alternative and Preferred Alternative 1B in Meeting Purpose and Need

Purpose and Need Element	No-Build Alternative	Preferred Alternative (Alternative 1B)
Safe and Efficient Transportation Access	Even with regular, continued maintenance, the bridge will remain functionally obsolete; additional weight restrictions may be placed on the bridge; the existing lane width is narrower than current standards require; the bridge will eventually be closed. Thus, the No-Build Alternative does not meet the need for safe and efficient transportation access.	The functionality of a new bridge will be brought up to current design standards; all weight restrictions will be removed; lane widths will be sufficient to carry all traffic.
Emergency Response Times	Current weight restrictions limit the size of emergency vehicles that can use the bridge; if the bridge were closed, the resulting circuitous detour to serve all parts of Cairo results in unacceptable response time delays of 25-30 minutes. Thus, the No-Build Alternative does not meet the need for emergency response times.	All emergency vehicles could use the bridge with no restrictions; emergency response times would remain the same or improve slightly.
Economic Development	Weight limits and substandard lane widths will continue to restrict commercial traffic; travelers may avoid Cairo because of conditions on the bridge or the possibility of a	Commercial trucks and local delivery vehicles will be able to use the new bridge unrestricted; additional traffic could stimulate opportunities for new recreation and travel

Purpose and Need Element	No-Build Alternative	Preferred Alternative (Alternative 1B)
	lengthy detour; tourist opportunities may decrease. Thus, the No-Build Alternative does not meet the need for economic development.	related services in the community.

WHAT ARE THE POTENTIAL IMPACTS OF THE PROJECT?

This EA is a condensed, reader-friendly report that provides all of the basic facts for the project, but limits detailed discussion where it may be unnecessary for understanding. As such, additional information and supporting documentation on the potential impacts of the project are incorporated into this EA in its appendices and in the Project Technical Support Files. All of that information is available for review by any interested party. Table 3 provides a summary of the potential impacts of constructing preferred Alternative 1B.

Table 3
Potential Impacts of Preferred Alternative 1B and the No-Build Alternative

Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
Environmental Justice	Executive Order 12898 of February 11, 1994, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires that the proposed project be assessed to determine whether or not it will have a disproportionately high impact on minority or low-income populations within the area.	There are no minority populations within the immediate project area. With a low-income population of 12 percent, the study area does not exceed the screening threshold of 18.9 percent for Ritchie County. The project will not displace any residents or businesses, nor will it change local transportation patterns. As a result, it is unlikely to have a disproportionate effect on environmental justice populations (see Appendix C).	No impact.
Tax Base	A minimal amount of taxable land, 0.7 acres, will be	Private land will be converted to a public	No impact.

Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
	converted to a transportation use.	use, removing it from the tax rolls. The impact to the Ritchie County tax base from the conversion will be negligible.	
Property Acquisitions	No businesses or residential properties will be displaced.	While no businesses or residential units will be lost, sliver takes will occur. The total amount of property to be acquired amounts to approximately 1.4 acres.	No impact.
Community Facilities and Services	No community facilities are located in the immediate project area. Police service is provided by the Ritchie County Sheriff's Department and the West Virginia State Police, both dispatched from Harrisville. The Cairo VFD responds to emergency calls on both sides of the bridge.	There will be no impact to existing access to community facilities and services. Construction of a new bridge will guarantee access well into the future and may result in decreased travel times.	Under the No-Build Alternative, bridge maintenance continues, but the bridge will continue to deteriorate until complete replacement is unavoidable. The shortest detour from one side of the bridge to the other is approximately 10-12 miles. Emergency response times using this route is 25-30 minutes
Community Cohesion	A community is a geographic area where local residents have made a commitment to both the physical environment where they live or work and the accompanying social system functioning within that environment. A strong community bond creates a sense of cohesion that can be expressed through the patterns of "daily social interaction, the use of local facilities, participation in local organizations, and involvement	Construction of a new bridge will allow current transportation patterns that support community cohesion to continue well into the future. During construction, traffic will be maintained on a one-lane temporary bridge with no weight restrictions as on the existing Cairo Bridge.	The bridge is a vital part of the community, linking two separate parts of the Town of Cairo in a location convenient to most residents and businesses. Severing that link, or changing its location will impact community cohesion.

Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
	in activities that satisfy the population's economic and social needs." (FHWA 1996).		
Farmlands	There are no farmlands within the project area.	No impact.	No impact.
Land Cover	Based on a review of U.S. Geologic Survey land cover data, the immediate project area has been classified as *Developed and Other Human Use* (USGS 2017). Land use within the project study area includes open space, residential, and commercial uses.	Permanent impacts to built-up land cover will amount to 1.4 acres.	No impact.
Rare, Threatened, and Endangered (RTE) Species	The North Fork Hughes River is known to contain a historical population of the federally endangered mussel species, clubshell (*Pleurobema clava*) and Northern Riffleshell (*Epioblasma torulosa rangiana*). The snuffbox (*Eplioblasma triquetra*) is also known to occur about 1.6 miles downstream in similar habitat. On June 2, 2017, however, the West Virginia Division of Natural Resources (WVDNR) notified WVDOH that there are no known occurrences of RTE species or natural trout streams in the study area. Nonetheless, formal consultation under Section 7 of the *Endangered Species Act* was initiated on June 15, 2017 (see Appendix J). A Biological Assessment (BA) and Opinion (BO) for the project are attached to this EA as Appendix I.	Mussels surveys were conducted for the project in 2015. While no RTE species were identified in the immediate project area, there are known populations of the federally listed endangered snuff box mussel upstream and downstream of the project area. Additionally, the North Fork Hughes River harbors a mussels community of moderate density and species richness of concern to the state and unidentified RTE species may be impacted.	No impact.
Streams	Only one stream, North Fork Hughes River, was identified within the study area. The river is a warm water fishery. It also serves as a public drinking source for three municipal water suppliers. No public intake	The project will permanently impact 0.08 acres of the North Fork Hughes River, a perennial stream, and temporarily impact 0.5 acres of the same	No impact.

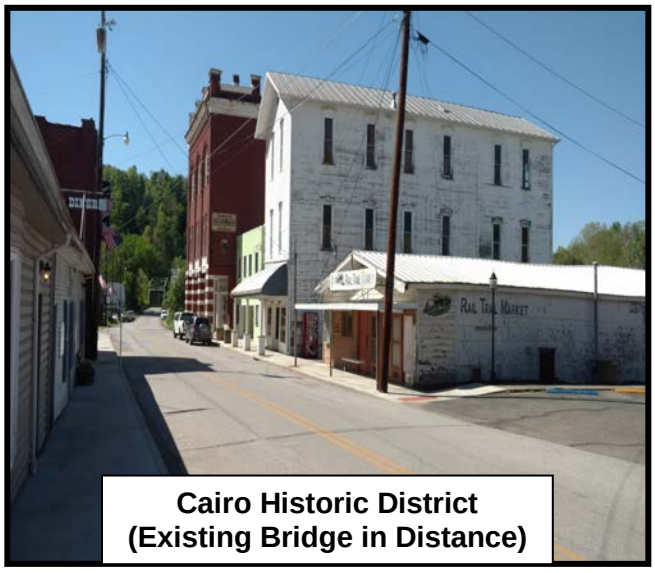
Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
	facilities for water service are located in the project area. Additional information on aquatic resources is found in Appendix D.	stream.	
Wetlands	No wetlands were identified within the project study area.	No impact.	No impact.
Floodplains	A Federal Emergency Management Act (FEMA) 100-year floodplain is located throughout the study area.	The profile of the structure is set to provide approximately 2 feet of freeboard over the 25-year storm elevation and minimal backwater for the 100 year storm. All of the low steel will be designed to be above the 100-year flood. The temporary detour bridge will provide 2 feet of freeboard over the 10-year storm.	No impact.
Groundwater	The North Fork Hughes River is used for potable water by three municipal water supplies including Cairo. No public intake facilities for water service are located in the project area; the closest is four miles upstream. The Town of Cairo provides public water service to approximately 190 customers. This service is provided to properties on both sides of the North Fork Hughes River.	No impact.	No impact.
Air Quality	With traffic at less than 1,000 vehicles per day, WV 31 is not a heavily traveled roadway. As a result, there is little impact to air quality from traffic.	The project is not a capacity adding project and air quality will not be affected.	No impact.
Noise	A bridge replacement on an existing location does not require a detailed noise analysis in accordance with *23 CFR 772* and existing WVDOH Noise Policy.	The project does not involve the addition of through traffic lanes that add capacity nor does it alter the horizontal or vertical alignment of the roadway. The future	No impact.

Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
		acoustical environment will be the same as the current condition.	
Potentially Hazardous Wastes	A Phase I Environmental Site Assessment was conducted in 2016 to identify recognized environmental conditions that could affect construction activities and identify any properties in the project area that contain regulated substances. The Phase I report is incorporated into this EA as Appendix E.	Two properties were identified as having recognized environmental conditions; the existing Cairo Bridge itself and a gas station located at 59 Main Street. A temporary construction easement across a sliver of the gas station property will be needed for the project, but the property will not be permanently impacted.	No impact.
Historic Resources	The entire project area falls within the Cairo Historic District. The Cairo Historic District has been determined eligible for the National Register of Historic Places. The existing bridge is a contributing element to the historic district.	The project will require removal of the existing bridge, a contributing element to the Cairo Historic District. It will also permanently impact 0.6 acres of the Cairo Historic District and temporarily impact 1.0 acres. As noted by the SHPO (see Appendix J), this will have an *Adverse Effect* on the historic district.	No impact.
Archaeological Resources	Archaeologic surveys were conducted in 2015. Although artifacts were recovered at one site that may be associated with the historic use of the site, the site lacks integrity. In a letter dated September 30, 2015 (see Appendix J), the SHPO concurred that no further archaeological investigations are necessary for the proposed project as currently designed.	No impact.	No impact.
Utilities	Utilities found in the project	Several utility lines	No impact.

Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
	area include electric, water, sanitary sewer, communications, and natural gas lines.	and associated utility components will be impacted.	
Secondary Impacts	Secondary impacts are later in time or further removed in distance from the current action. A detailed analysis of secondary and cumulative impacts is incorporated into this EA as Appendix G.	Unlikely.	Closure of the bridge could induce secondary impacts by shifting future development to other locations outside the built-up area of Cairo.
Cumulative Impacts	Cumulative impacts result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions. Past projects since 1970 and planned actions through the year 2030 were reviewed to complete a qualitative assessment of cumulative impacts in central Ritchie County. A detailed analysis of secondary and cumulative impacts is incorporated into this EA as Appendix G.	Actions that may contribute to cumulative effects on terrestrial habitat, land use, water quality, wetlands, air quality, traffic, and cultural resources in the area include: water and sewer system improvements in Cairo, Harrisville, and Pennsboro; transportation improvements throughout Ritchie County; and conversion of farm or forest land to commercial or residential development.	Loss of the bridge will create a negative cumulative effect on the community.
Section 4(f) Resources	The *Department of Transportation Act of 1966* states, in part, that transportation projects may not take land from any historic site unless there is no feasible and prudent alternative to the use of that land; and, all possible efforts to minimize harm to the property resulting from such use have been undertaken. A Section 4(f) Evaluation is incorporated into this EA as Appendix F.	The project will require removal of the existing bridge, a contributing element to the Cairo Historic District. It will also permanently impact 0.6 acres of the Cairo Historic District and temporarily impact 1.0 acres. There are no feasible and prudent alternatives that avoid Section 4(f) use for the project.	There will be no immediate use of Section 4(f) properties, but closure of the bridge would require removal of the structure, constituting a Section 4(f) use.

Resource or Element	Context	Preferred Alternative (Alternative 1B)	No-Build Alternative
Temporary Construction Impacts	Construction of a new bridge will have short-term impacts to and benefits on the project area.	Property owned by the Town of Cairo, the Cairo United Methodist Church, and two private businesses will be used for the temporary bridge, requiring a temporary state easement to use the property. The construction phase of the project may temporarily influence sound levels in the immediate vicinity of the activity, particularly during demolition.	No impact.

WHAT ARE THE SPECIFIC IMPACTS TO THE CAIRO HISTORIC DISTRICT?



Cairo Historic District (Existing Bridge in Distance)

The Cairo Historic District was determined eligible for the *National Register of Historic Places* (NRHP) in 2016, and, as such, is treated identically to historic resources that are listed on the NHRP. The district is shown on Figure 5 and includes two resources already on the NRHP or eligible for it, the Bank of Cairo building and the Cairo Pony Truss Bridge (a second bridge in the town). The historic district also includes 64 contributing properties. Contributing elements are important features of a historic district. They add to the various known historic associations, the representative historic architectural qualities, or the archeological values of the district, even though they are not individually eligible for the NRHP.

In a letter dated March 1, 2016 (see Appendix J), the SHPO concurred with the recommendation that there is a historic district in Cairo. The SHPO also concurred on the recommended boundary and composition of the district.

No buildings within the historic district will be impacted by the project, but the project will require removal of the existing bridge. The bridge itself is a contributing element to the Cairo Historic District. The project will also permanently impact 0.6 acres of the Cairo Historic District and temporarily impact 1.0 acres, resulting in an *Adverse Effect* on the historic district. The SHPO concurred with this decision on February 7, 2017 (see Appendix J).

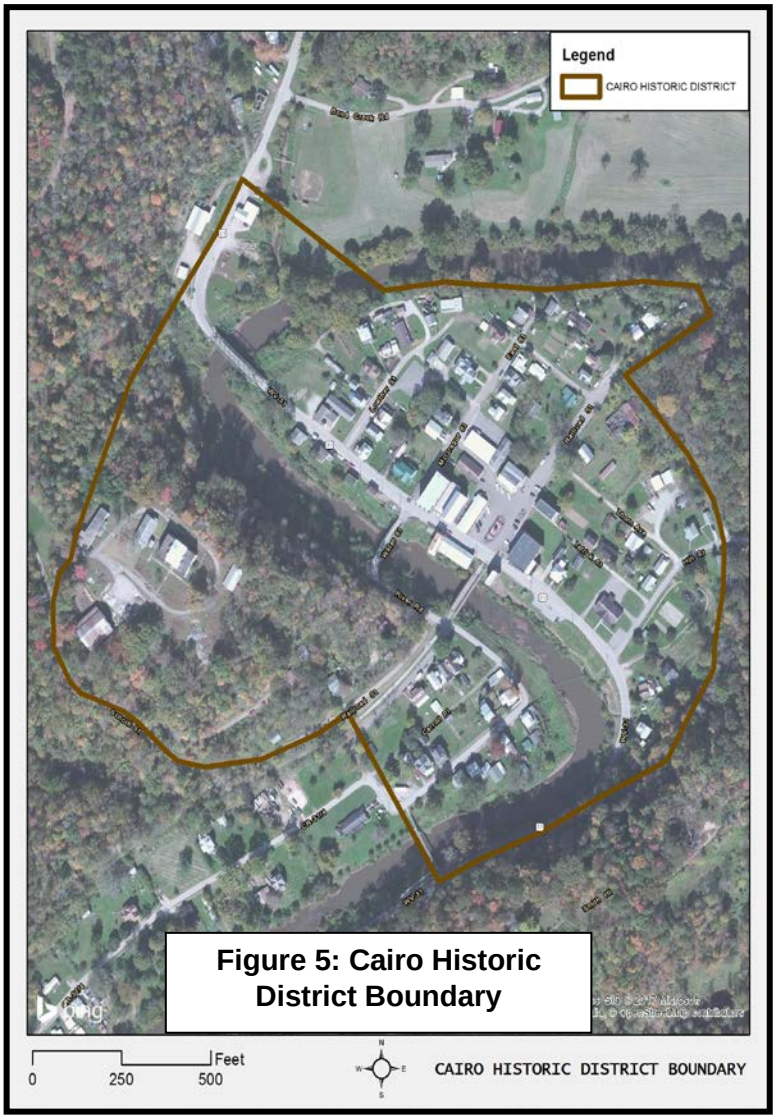


Figure 5: Cairo Historic District Boundary

Based on the Section 4(f) Evaluation, incorporated into this EA as Appendix F, the Cairo Historic District has been identified as a Section 4(f) resource and any impacts to the district will constitute a Section 4(f) use. As a result of the evaluation, however, it has also been determined that there are no feasible and prudent alternatives that avoid a Section 4(f) use for the project.

The WVDOH, in cooperation with the SHPO, FHWA, the Town of Cairo, and the Ritchie County Historic Landmarks Commission, has developed a mitigation plan for removal of the existing bridge and the minimal impact it will cause to the historic district. The results of that cooperative effort are documented in a Memorandum of Agreement (MOA). Signatories to the MOA include FHWA, WVDOH, the SHPO, the Advisory Council on Historic Preservation, and

the Ritchie County Historic Landmarks Commission. A copy of the MOA is attached as Appendix H.

MITIGATION OF IMPACTS FROM PREFERRED ALTERNATIVE 1B

To lessen any permanent or temporary impacts from construction of a new bridge and use of a detour during construction, several mitigation commitments have been proposed by the WVDOH. Those commitments are shown in Table 4. Additional mitigation measures may be proposed during final design to further avoid and/or minimize any temporary and permanent impacts caused by the project.

Table 4
Mitigation Commitments Associated with Preferred Alternative 1B

Resource or Element	Impact	Mitigation Measures
Property Acquisitions	No residences, businesses, or historic structures (other than the bridge itself) will be taken for the project. There will be sliver takes of property on both sides of the river totaling 1.4 acres. Property owned by the Town of Cairo and the Cairo United Methodist Church will also be used for the temporary bridge.	All properties to be acquired, or used temporarily, will be purchased or utilized in accordance with the *Uniform Relocation and Real Property Acquisition Policies Act*, Title VI of the *Civil Rights Act*, and applicable West Virginia laws.
Land Cover	Impacts to land cover will amount to 1.4 acres of built-up land.	An approved Erosion and Sedimentation Control Plan will be implemented to minimize impacts to the water quality and habitat of the project area streams. All disturbed areas will be revegetated utilizing a native seed mixture and landscaped upon completion of construction.
RTE Species	Habitat for mussels is present and a mussel survey was conducted in 2015. There are known populations of the federally listed endangered snuff box mussel upstream and downstream of the project area and the immediate project area harbors a mussels community of moderate density and species richness that are of special	Mitigation for impacts to mussels include: ➢ the systematic relocation during low water conditions in the autumn prior to construction; ➢ monitor recolonization sites for five years subsequent to relocation; and ➢ institute proper erosion and sediment control measures during construction. Complete details of the proposed mitigation elements are found in the BA (see Appendix

Resource or Element	Impact	Mitigation Measures
	concern to the State of West Virginia. The WVDOH chose to submit a BA to the U.S. Fish and Wildlife Service (USFWS) to document conditions in the river. Copies of the BA and BO are attached as Appendix I.	I). Additional mitigation measures associated with the mussels populations are found in the "Streams" mitigation section of this table.
Streams	The North Fork Hughes River is used for potable water by three municipal water suppliers including the Town of Cairo. The section of the river near Cairo is also used for spawning by warm water fishes.	The following permits will be required for the project prior to construction: Clean Water Act (CWA) Section 404 Permit from the U.S. Corps of Engineers (USACE); CWA Section 401 Certification from the West Virginia Department of Environmental Protection (WVDEP); and a National Pollutant Discharge Elimination System (NPDES) Permit also from the WVDEP. In-stream work will be restricted from April 1 through June 30 due to warm water fish spawning. To avoid and/or minimize potential impacts to water quality, the following best management practices (BMPs) will be used, where appropriate, during construction: ➢ Reduce the amount of disturbed aquatic habitat and riparian vegetation; ➢ revegetate all disturbed areas to prevent accelerated erosion; ➢ construct all cofferdams, causeways, and temporary crossings with large, clean, rock fill material and filter fabric on the downstream side to trap sediments; ➢ minimize the need for in-stream work; ➢ develop project sequencing to facilitate in-stream work during periods of seasonal low flow; ➢ designate equipment fueling and service areas away from aquatic habitats; ➢ designate and construct all stormwater management facilities to prevent runoff; ➢ minimize the amount of vegetative clearing and impervious surface; ➢ develop bridge demolition sequencing that avoids and/or minimizes impacts

Resource or Element	Impact	Mitigation Measures
		to stream resources; and ➢ coordinate stream mitigation activities with the natural resource agencies.
Air Quality	There are no long-term impacts to air quality from the project. During construction, however, there will be an increase in emissions by heavy construction equipment and an increase in dust. Dust and exhaust particulate emissions from heavy equipment operations may temporarily degrade air quality in the immediate construction zone. Impacts from dust will be localized within the immediate area of construction.	If it is necessary to burn land clearing debris in order to complete the project, approval by the WVDEP Secretary or an authorized representative is required to conduct such burning. If the project entails the renovation, remodeling, or demolition, either partially or totally, of a structure, building, or installation, irrespective of the presence or absence of asbestos-containing materials, and is subject to 45CSR15 (the asbestos NESHAP at 40 CFR 61, Subpart M), a formal Notification of Abatement, Demolition, or Renovation must be completed and timely filed with the DEP Secretary's authorized representative and approval received before commencement of the activities addressed in the Notification. If the project involves demolition, and/or excavation and transportation of soil/aggregates or the handling of materials that can cause problems such as nuisance dust emissions or entrainment or creation of objectionable odors, adequate air pollution control measures must be applied to prevent statutory air pollution problems as addressed by 45CSR4 and 45CSR17. Backup or emergency electrical generators may be subject to federal and state requirements and require an air permit in accordance with 45CSR13.
Noise	Construction may temporarily influence sound levels in the immediate vicinity of the activity, particularly during demolition activities.	Noise generating construction activities such as pile driving or jack hammering should be minimized and completed during daytime activities.
Potentially Hazardous Wastes	Demolition of the bridge may release stable contaminants.	A lead based paint inspection of the bridge should be completed prior to initiation of bridge demolition. The inspection should be carried out early so that inspection findings and mitigation recommendations can be incorporated into construction documents prior to contract bidding.
Historic Resources	The project will remove the existing Cairo Bridge, a contributing element to the Cairo Historic District, and use	A *Memorandum of Agreement* (MOA) has been developed to address adverse effects and mitigation. It contains the following stipulations to mitigate the adverse effect:

Resource or Element	Impact	Mitigation Measures
	other property within the Cairo Historic District, thus causing an *Adverse Effect* on the historic district. No structures within the district other than the bridge will be taken.	➢ The Cairo Bridge will be documented in its present historic setting. The documentation package will include 5" x 7" black and white digital prints in accordance with the NRHP and National Historic Landmarks Survey Photo Policy Expansion of January 2009. ➢ A brief history of the structure will be included along with fully completed West Virginia Historic Property Inventory forms and copies of any available plan sheets and drawings of the bridge from the WVDOH bridge files. ➢ The WVDOH will provide a sum of $10,000 to the Ritchie County Historic Landmarks Commission who has requested interpretive signs, ornamental railing from the old bridge and preservation work to the Veterans Memorial in Town Square. Funding will be provided once all projects have been identified. Any work completed on historic buildings must comply with the Secretary of Interior's Standards for the Treatment of Historic Properties and must be submitted for review by the WVSHPO prior to commencement of work. Any interpretive material, such as signs and brochures, will be submitted to the WVDOH for review and approval by the SHPO and the WVDOH. The Ritchie County Historic Landmarks Commission will provide status reports summarizing progress and financial information in writing or via email to the WVDOH every six months. ➢ 500 color brochures of the Cairo Bridge will be developed by the WVDOH and distributed to the Town of Cairo and the Ritchie County Historic Landmarks Commission. The SHPO will be given the opportunity to review all educational materials developed for this stipulation. A CD containing the

Resource or Element	Impact	Mitigation Measures
		brochure will also be given to the Town and Landmarks Commission to print brochures when the original total has been exhausted. ➢ The Cairo Bridge will be documented on the West Virginia historic bridge website: *Highways through History* (http://www.highwaysthroughhistory.com).
Utilities	Utility relocations will be required as a result of the project.	Coordination with the utility operators will be required throughout final design and construction of this project. Coordination meetings will be held to discuss the need for additional right-of-way, expansion, or relocation easements; impacts to schedules; construction requirements; and any other special issues. Utility relocations are typically required on most transportation projects and the WVDOH has detailed procedures for coordinating with impacted utilities. The relocation of affected utilities will be completed prior to the start of construction with limited inconvenience to the public.
Section 4(f) Resources	The project will require removal of the existing bridge, a contributing element to the Cairo Historic District. It will also permanently impact 0.6 acres of the Cairo Historic District and temporarily impact 1.0 acres.	Project-specific mitigation for permanent impacts are listed above in this table under the "Historic Resources" mitigation section. For temporary impacts to the historic district, the following mitigation efforts apply: ➢ A one-lane temporary bridge will minimize impacts on the district caused by the temporary structure and limit the restoration footprint removal. ➢ If necessary, property owned by the Town of Cairo along the banks of the North Fork Hughes River that was impacted by the temporary bridge will be enhanced. ➢ Minor, temporary construction easement and staging areas will be required adjacent to WV 31 and the existing Cairo Bridge. ➢ All construction staging areas and temporary work areas will be restored to their original condition. ➢ The parking lot and adjoining property of the Cairo United Methodist Church will be re-graded and restored.

Resource or Element	Impact	Mitigation Measures
		Appendices F and H of this EA provide more detailed information on impacts to this Section 4(f) resource and mitigation measures.
Temporary Construction Impacts	Short-term impacts associated with construction include, but are not limited to, inconvenient traffic conditions, increased noise and particulate air pollution, erosion, and health and safety-related construction issues.	Construction activities affecting traffic will be coordinated with local municipalities, media outlets, the state park, and emergency services. Construction operations will be scheduled to minimize traffic delays. Any traffic disruptions will be temporary, localized, and of short duration, only occurring during the construction period. A detour will be provided with a single-lane temporary bridge utilizing a temporary easement slightly upstream of the existing bridge. Once the replacement bridge is open to traffic, the temporary bridge will be removed. Access to residences and businesses will be maintained during construction although temporary disruptions may occur. Construction will be performed to comply with all applicable federal, state, and local laws regarding safety, health, and sanitation. All contractors are required to adhere to Occupational Safety and Health Administration guidelines to protect the lives and health of employees, the safety of the public, and the integrity of adjacent properties.

RESOURCE AGENCY COORDINATION

Throughout development of the project, the WVDOH has coordinated with environmental resource and transportation agencies with jurisdiction over, or having operating responsibilities with, transportation projects. Agencies that have taken an active role in the project to date include the FHWA, the USFWS, the West Virginia Division of Culture and History (the SHPO), the West Virginia Division of Natural Resources, the Ritchie County Economic Development Authority, and

Team Members Reviewing Agency Comments

the Town of Cairo. Relevant correspondence from these agencies is found in Appendix J. Prior to distribution of the EA, the only outstanding agency issue concerned recreational access to the river. The WVDNR had requested that parking spaces and a path from the bridge to the river be incorporated into the design of the bridge to make the area more attractive to recreational fishers. Although a reasonable request, WVDOH will not be able to incorporate such features into the bridge design without purchasing additional right-of-way. WVDOH is prohibited from purchasing right-of-way for a non-transportation use, however, and cannot do this.

REQUIRED PERMITS

The following permits will be required for the project prior to construction: CWA Section 404 Permit from the USACE; CWA Section 401 Certification from the WVDEP; and a NPDES Permit also from the WVDEP.

REFERENCES

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National Fire Protection Association. 2016. *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. Quincy, Massachusetts.

United States Geological Survey. 2017. *National Land Cover Data Base.* Washington, District of Columbia.

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West Virginia Division of Tourism. 2012. West Virginia Ten Year Tourism Plan. Charleston, West Virginia.

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DISTRIBUTION LIST

Federal, state and local agencies, and Tribal Nations with jurisdiction over, or interest in, transportation projects will receive a copy of this EA to review and comment on prior to the public meeting. Agencies receiving a copy are shown in Table 5. The EA will be posted on the WVDOH website with hard copies made available for agency and public review. A public meeting or hearing will be held to allow agency representatives, local residents, business owners, and public officials an opportunity to comment on the document. The comment period will extend for 45 days. All substantive comments will be addressed in a follow-up environmental document.

Table 5
Agency Distribution List

Federal Agencies	Tribal Nations	State and Local Agencies	
Jessica Martinsen U.S. Environmental Protection Agency Office of Environmental Programs 1650 Arch Street Philadelphia, PA 19103-2029 Barbara Okorn U.S. Environmental Protection Agency Office of Environmental Programs 1650 Arch Street Philadelphia, PA 19103-2029 Willie R. Taylor, Director Office of Environmental Policy and Compliance U.S. Department of the Interior 1849 C Street, NW (MS 2462) Washington, DC 20240 Michael Hatten, Chief Regulatory Division U.S. Army Corps of Engineers Huntington District, CELRH-RD 502 Eighth Street Huntington, WV 25701-2070 John Schmidt, Supervisor U.S. Fish and Wildlife Service West Virginia Field Office 694 Beverly Pike Elkins, WV 26241 Norm Bailey, Resource Conservationist NRCS U.S. Department of Agriculture 1550 Earl Core Rd., Suite 200 Morgantown, WV 26505 Mary Ann Tierney, Regional Administrator Federal Emergency Management Agency 615 Chestnut Street Philadelphia, PA 19106	Nekole Alligood, Cultural Preservation Director Delaware Nation P.O. Box 825 Anadarko, OK 73005-0825 Russell Townsend, Tribal Historic Preservation Officer Eastern Band of Cherokee Indians P.O. Box 455 Cherokee, NC 28719 Robin Dushane, Tribal Historic Preservation Officer Eastern Shawnee Tribe of Oklahoma 12705 East 705 Road Wyandotte, OK 74370 Dr. Andrea Hunter, Tribal Historic Preservation Officer Osage Nation 627 Grandview Pawhuska, OK 74056 Contact: Micco Emarthia, Tribal Historic Preservation Officer Seneca-Cayuga Tribe of Oklahoma P.O. Box 45322 Grove, OK 74345 Scott Abrams, Tribal Historic Preservation Officer Seneca Nation of Indians 90 Ohi:yo' Way Salamanca, NY 14779 Eric Oosahwee-voss, Tribal Historic Preservation Officer United Keetoowah Band of Cherokee Indians in Oklahoma P.O. Box 1245 Tahlequah, OK 74465	Austin Caperton, Cabinet Secretary West Virginia Department of Environmental Protection 601 57th Street, SE Charleston, WV 25304 Scott G. Mandirola, Director Division of Water and Waste Management Permitting and Engineering Branch West Virginia Department of Environmental Protection 601 57th Street, SE Charleston, WV 253041-2345 Patty Hickman, Acting Division Director, Division of Land Restoration Office of Environmental Remediation West Virginia Department of Environmental Protection 601 57th St, Room 1072 Charleston, WV 25304-2345 William F. Durham, Director Office of Air Quality West Virginia Department of Environmental Protection 601 57th Street, SE Charleston, WV 25304-2345 Susan Pierce, Deputy State Historic Preservation Officer West Virginia Division of Culture and History 1900 Kanawha Blvd East Charleston, WV 25305 Steve McDaniel, Director West Virginia Division of Natural Resources 324 Fourth Avenue South Charleston, WV 25303 Danny Bennett West Virginia Division of Natural Resources P.O. Box 67 Elkins, WV 26241	Alan Reed, District 10 Engineer West Virginia Division of Highways 270 Hardwood Lane Princeton, WV 24740 Carol Jackson, Executive Director Mid-Ohio Valley Regional Council 531 Market Street Parkersburg, WV 26101 Samuel C. Rogers, Chair Ritchie County Commission 115 East Main Street, Room 201 Harrisville, WV 26326 Steve Parks, Executive Director Ritchie County Economic Development Authority 217 West Main Street Harrisville, WV26362

APPENDICES

Appendix A: Public Involvement Materials

Appendix B: Final Design Study Report

Appendix C: Environmental Justice Analysis

Appendix D: Aquatic Resources Investigation

Appendix E: Phase I Environmental Site Assessment

Appendix F: Section 4(f) Evaluation

Appendix G: Secondary and Cumulative Impacts Analysis

Appendix H: Memorandum of Agreement (MOA)

Appendix I: Biological Assessment and Biological Opinion

Appendix J: Agency Coordination Letters